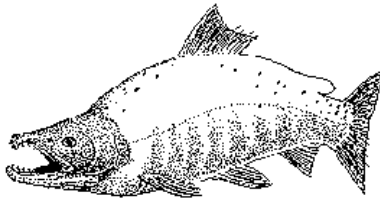


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# ***ISSUES AND INFORMATION NEEDS***

## ***FEDERAL SUBSISTENCE FISHERIES RESOURCE MONITORING PROGRAM***



**Guidance Provided by Federal Subsistence Regional Advisory Councils for  
Development of Year 2004 Fisheries Resource Monitoring Program**

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Office of Subsistence Management  
Fisheries Information Services Division  
U.S. Fish and Wildlife Service  
3601 C Street, Suite 1030  
Anchorage, Alaska 99503

1-800-478-1456 or 907-786-3397 Voice  
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November 15, 2002

## Introduction

This document records issues and information needs for federal subsistence fisheries management identified by Regional Advisory Councils with input from subsistence users, the general public, tribes, the Alaska Department of Fish and Game, and federal agencies. These issues and information needs have been reviewed by the Regional Advisory Councils each year and are used to guide the development of the Subsistence Fisheries Resource Monitoring Program. This document is not intended to be an all-inclusive statement of information needs for subsistence fisheries management on federal lands in Alaska. Rather, this list represents a systematic documentation of issues related to federal subsistence fisheries. New issues will arise and some information needs may have been missed. Thus, the contents of the document are open for review and revision.

Although included within issues and information needs listed by some Regional Advisory Councils, the following activities are not eligible for funding under the Fisheries Resource Monitoring Program:

- Habitat protection, restoration, and enhancement;
- Hatchery propagation, assessment, enhancement, and supplementation;
- Contaminant assessment, evaluation, and monitoring.

These activities on Federal Conservation Units are more appropriately addressed through the land management agencies.

Investigators preparing proposals for FY2004 Fisheries Resource Monitoring Program projects should use this document as an important source of ideas to guide project development. While Fisheries Resource Monitoring Program project selections will not be restricted solely to information needs or subsistence management issues identified in this document, adequate justification must be provided on why a new topic is appropriate. Proposals should address the following and must meet the first criteria to be eligible for federal subsistence funding.

1. **Federal Jurisdiction** – Issue or information needs addressed in projects must have a direct association to a subsistence fishery within a federal conservation unit as defined in legislation, regulation and plans.
2. **Conservation Mandate** – Risk to the conservation of species and populations that support subsistence fisheries, and risk to conservation unit purposes as defined in legislation, regulation and plans.
3. **Allocation Priority** – Risk of failure to provide a priority to subsistence uses, and risk that subsistence harvest needs will not be met.
4. **Data Gaps** – Amount of information available to support subsistence management (higher priority given where a lack of information exists).
5. **Role of Resource** – Contribution of a species to a subsistence harvest (e.g., number of villages affected, pounds of fish harvested, miles of river) and qualitative significance (e.g., cultural value, unique seasonal role).
6. **Local Concern** – Level of user concerns over subsistence harvests (e.g., upstream vs. downstream allocation, effects of recreational use, changes in fish abundance or population characteristics).

The document is organized by the six geographic fisheries study regions used within the Fisheries Resource Monitoring Program to serve federal subsistence fisheries management needs.

**ARCTIC/KOTZEBUE/NORTON SOUND REGION**  
**YUKON RIVER REGION**  
**KUSKOKWIM RIVER REGION**  
**BRISTOL BAY-ALASKA PENINSULA/KODIAK-ALEUTIANS REGION**  
**COOK INLET/GULF OF ALASKA REGION**  
**SOUTHEAST ALASKA REGION**

Issues and information needs are organized into two information categories:

**STOCK STATUS AND TRENDS (SST)**  
**SUBSISTENCE HARVEST MONITORING/TRADITIONAL ECOLOGICAL KNOWLEDGE (HM/TEK)**

Neither the numbering of these categories, nor issues and information needs listed within these categories, reflects their priority in the program.

Each project developed for the 2004 Fisheries Resource Monitoring Program should focus on one information category only.

Any comments, suggestions, or additional fisheries issues should be sent, phoned, or faxed directly to:

Office of Subsistence Management  
Fisheries Information Services Division  
Attn: Kathy Orzechowski  
U.S. Fish and Wildlife Service  
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## **ARCTIC/KOTZEBUE/NORTON SOUND REGION SUBSISTENCE FISHERIES MONITORING ISSUES**

The three Regional Advisory Councils for this fisheries study region have played the lead role in identifying important issues and information needs since 2000. A strategic planning process was begun in 2002 to ensure that Fisheries Resource Monitoring Program funds are being effectively used to address these issues and needs. Answers to a series of questions were used to provide: an information gap analysis of existing issues and information needs; a framework for balancing the need to continue projects that collect long-term data sets with the need to fund projects that address new issues and needs; and a strategy for prioritizing project selection and making the most efficient use of available funds. Initial assessments, presented at spring and fall 2002 Regional Advisory Council meetings, provided the following findings:

- How well have funded studies addressed issues and information needs for this region?  
The Fisheries Resource Monitoring Program has generally been successful in directing funding towards issues and information needs identified by Councils for this region. Most of the Councils' issues and information needs that have not been addressed concern fish stocks, fisheries, or areas outside the jurisdiction of the federal subsistence fishery management program; or issues more appropriately handled through other programs or agencies.
- Have the most important issues and information needs been identified for this region?  
While the three Councils have generally been successful in identifying important issues and information needs for this region, some additions were suggested. These included salmon stock status and trends studies for Unalakleet and Noatak rivers; and database development and improved information access for collected and available information needed to manage federal subsistence fisheries. Also, the importance and need for studies on Arctic grayling and salmon spawning on the North Slope remained uncertain.
- Which issues and information needs require continued collection of long-term data sets?  
Within this region long-term collection of stock status and trend information may be needed for salmon stocks spawning in the Unalakleet, Noatak, and Pitmiktalik rivers, as well as any heavily exploited Dolly Varden and whitefish stocks identified during ongoing studies. It is not clear at this time whether any federal subsistence fisheries within this region require annual harvest monitoring. Ongoing studies will be used to make this determination.
- Are there any matching or alternative funding sources that should be considered in recommendations for project selection?  
Programs administered by the North Pacific Research Board and the North Pacific Anadromous Fish Commission, as well as the Norton Sound Salmon Research and Restoration Fund, may provide funding for studies useful for federal subsistence fisheries management within this fisheries study region. However, it may still prove difficult to sustain funding for the highest priority federal subsistence fishery management information needs without supplemental funding for the Fisheries Resource Monitoring Program.

- Are there additional regulatory or management concerns that should be considered in recommendations for project selection? No additional regulatory or management concerns were identified that needed to be addressed by 2004 studies. Concerns associated with a 2003 regulatory proposal for Pikmiktalik River salmon resources were included in the existing information and needs list, and are being addressed by a study funded in 2002 as well as a study proposal for 2003.

The three Regional Advisory Councils were generally pleased with results of the Fisheries Resource Monitoring Program to date, and felt it was too early to further focus funding efforts. So, while these Councils updated their issues and information needs list, they did not establish any priorities for 2004 funding:

## **Arctic (North Slope)**

### **Stock Status and Trends**

1. Distribution, Abundance, and Life History of Fish Species
  - Stock assessment of Arctic Cisco (*Qaaktaaq*).
  - Status of Arctic grayling populations, particularly near Point Hope.
  - Broad whitefish abundance, stock structure, distribution, movement, and sustainable harvest rates for populations in Fish and Judy Creeks; Chipp/Ikpikpuk, Meade, Colville, Inaru, and Topagaruk Rivers.
  - Stock structure and seasonal movement patterns of char, and effects of these factors on subsistence fisheries.
  - Spawning status of pink, chum, and chinook (king) salmon.
2. Coastal Ecology
  - Document the ecological role of fish species in the coastal food web, including information on availability of forage fish for sea birds, marine mammals and other fishes harvested for subsistence food.
  - Assess changes in coastal marine productivity.

### **Subsistence Harvest Monitoring**

#### Subsistence Harvest Patterns

- Determine importance of char in subsistence harvests for different villages.
- Determine harvest levels of Arctic grayling in fishing areas near Barrow, Teshekpuk Lake, Wainwright, Point Lay, and Point Hope.
- Determine harvest levels of important fish species for North Slope villages.

## Kotzebue (Northwest Arctic)

### Stock Status and Trends

1. Distribution, Abundance, and Life History of Fish Species
  - Stock structure and seasonal movement patterns of char, and effects of these factors on subsistence fisheries.
  - Distribution, abundance, and life history of whitefish in the Selawik River
  - Distribution, abundance, and life history of salmon and trout (char) in the Unalakleet River.
  - Distribution and abundance of fish species in the Deering (salmon) and Buckland areas.
2. Effects of Sport Fishing Activities on Subsistence Fishery Resources - Determine long-term mortality of released angler-caught inconnu (sheefish), char, and other freshwater species, including fish that are caught multiple times.
3. Fisheries Monitoring - Determine effects of tagging on inconnu (sheefish) survival, growth, and condition.
4. Comments About Water Quality and Fish Contamination - Shungnak residents are concerned about effects of sewage contamination and water quality on subsistence fishery resources.

## Norton Sound (Seward Peninsula)

### Stock Status and Trends

1. Distribution, Abundance, and Life History of Fish Species
  - Distribution, abundance, and life history of chinook (king) salmon, coho (silver) salmon, pink salmon, chum salmon, whitefish, inconnu (sheefish), tomcod, herring and trout (char) in the Pikmiktalik, Steamboat, Golsovia, Big Canal, Small Canal, Nunavulnuk, and Nunkogak Rivers.
  - Document trends in juvenile salmon seaward migration to assess survival and freshwater productivity of Norton Sound salmon stocks.
  - Effects of beaver dams on chinook (king), chum, and coho salmon in the Pikmiktalik River.
2. Effects of Sport and Commercial Fishing Activities on Subsistence Fishery Resources
  - Determine effects of sport fishing activities on coho salmon in the Unalakleet River, including effects of catch-and-release fishing and jet boat use.
  - Determine effects of offshore commercial fisheries intercepting local salmon stocks.

**Subsistence Harvest Monitoring**

Subsistence Harvest Patterns - Monitor trends in areas fished and species targeted by Nome sub-district subsistence users resulting from declines in key salmon runs.

**All of Arctic/Kotzebue/Norton Sound Study Area****Subsistence Harvest Monitoring**

Harvest Monitoring Design - Conduct data collection and validation studies for subsistence harvests made by local tribal groups.

**Traditional Ecological Knowledge**

1. Long Term Trends and Sources of Variation
  - Document Traditional Ecological Knowledge on stock abundance variations over long time periods for important fish species.
  - Document Traditional Ecological Knowledge of subsistence fish population trends, causes of population variations, traditional conservation measures, and management approaches.
  - Identify potential causes or explanations for low and high fish abundance from Traditional Ecological Knowledge.
2. Fish Life History – Document elders’ knowledge of seasonal patterns of fish movement.
3. Subsistence Use and Practices
  - Document elders’ knowledge of traditional fishing areas for key species.
  - Develop indigenous definitions of subsistence uses and practices.
  - Determine and validate customary and traditional uses by consulting local community elders.
4. Comments about Subsistence Management
  - More emphasis should be given to local knowledge as a basis for subsistence management.
  - Local community elders should be consulted to determine and validate customary and traditional uses.

## **YUKON RIVER REGION**

### **SUBSISTENCE FISHERIES MONITORING ISSUES**

All three Regional Advisory Councils for this region, (Yukon Kuskokwim Delta, Eastern Interior and Western Interior) have played an important role in identifying important issues and information needs in this region since 2000. During the winter 2002 Regional Advisory Council meetings, the need to review and update *Issues & Information Needs* for the Yukon River was highlighted. The Yukon River Coordinating Fisheries Committee assumed the task of working with Federal and State inseason fisheries managers and the Office of Subsistence Management to review and update issues and information needs to ensure a balance between regional and drainage-wide concerns. While no previously identified issues were removed, clarifying language was added to provide a better understanding of issues and needs. This version will help focus the selection of future fisheries monitoring projects funded by the Office of Subsistence Management.

Several regional strategic planning processes are occurring or have occurred due to concerns over declining salmon runs in the Yukon fisheries region. All of these are designed to identify data gaps and information needs for salmon research. The Artic-Yukon-Kuskokwim coalition, comprised of the Association of Village Council Presidents, the Tanana Chiefs Conference, and Kawerak, Inc. are working with the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service to develop a Research and Restoration plan to prioritize salmon research needs in western Alaska. The U.S./Canada Joint Technical Committee is currently developing a plan evaluating current and future research needs for Yukon River salmon. The Yukon River Comprehensive Salmon Plan developed by ADF&G and the Yukon Drainage Fisheries Association in 1998, outlines information needs and management strategies for Yukon River salmon stocks. It is important that the Fisheries Resource Monitoring Program supplements and not duplicate existing fisheries programs to provide the greatest benefits to managing important subsistence fisheries resources.

In revising issues and information needs for the Yukon River, considerable thought was given to the following questions:

- How well have funded studies addressed issues and information needs for this region? In general, Regional Advisory Councils felt that project selections to date have addressed most of the important issues and information needs. Further clarification was provided in the revised guide, to provide a better understanding of the issues and information needs, and provide clearer direction for proposal development.
- Have the most important issues and information needs been identified for this region? Through revising the issues and information needs for the Yukon River the most important issues have been identified for the Yukon River Region
- Which issues and information needs require annual collection of long-term data sets? As outlined in the revised issues and information needs, project selection in the Fisheries Resource Monitoring Program should focus largely on the important and declining



chinook, summer and fall chum salmon stocks in the Yukon River. Projects should not only focus stock on status, population monitoring, assessment and escapement projects, but also on monitoring patterns of subsistence salmon harvest and use. Regulatory and management concerns may also require time-series data collection.

- Are there any matching or alternative funding sources that should be considered in recommendations for project selection? The Fisheries Resource Monitoring Program is integrated with ongoing Yukon River planning processes such as the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative as well as other efforts. The focus of all of these efforts should be to maximize the effectiveness of our limited funding, to supplement and not duplicate existing fisheries programs, and most importantly, to provide the greatest benefits to subsistence fisheries resources. However, it may still prove difficult to sustain funding for the highest priority federal subsistence fishery management information needs and local capacity building efforts without supplemental funding for the Fisheries Resource Monitoring Program
- Are there additional regulatory or management concerns that should be considered in recommendations for project selection? As discussed at the Fall 2002 Regional Advisory Council meetings, the Councils may want to consider addressing the question on the impacts of *Ichthyophonus* on chinook mortality/fecundity.

Issues and information needs, addressed in detail below, are organized into three information categories: *Stock Status and Trends*, *Subsistence Harvest Monitoring*, and *Traditional Ecological Knowledge*. Listed under each category are issues and/or information needs identified by the Yukon River Regional Councils. Several issues and information needs apply to all three information categories:

- Whenever possible, employ local residents to assist with the projects and provide opportunities to expand the capacity of local communities and organizations to participate in the Fisheries Resource Monitoring Program.
- Improve communications with subsistence users and their villages, tribes, local advisory committees, and regional councils about ongoing and completed projects.

## **Stock Status and Trends**

### **1. Distribution, Abundance and Life History of Fish Species**

- Describe the distribution, abundance, life history and harvest of freshwater resident species.
- Assess the effects of naturally occurring phenomenon on fishery resources (specifically identified issues include environmental disasters and climate change like the 1994 and 1998 floods on the Koyukuk River, unusually cold winters, increasing river temperatures, pathogens and beavers.).
- Determine the causes of the poor chinook and chum salmon runs in the Yukon River during 1998 – 2002.
- Identify the contribution of individual or geographically similar populations of salmon to mixed stock fisheries in the Yukon River drainage (e.g. stock pattern analysis, genetic identification, etc.).

- Assess the production and contribution of salmon from tributary streams to the overall salmon run (e.g. surveys and assessment projects, including weirs, towers, radio telemetry, etc., specifically small stream contributions of the Koyukuk River).
- Establish a coho escapement project somewhere between the Yukon River mouth to the confluence of the Tanana River. There is a general lack of information about the distribution of coho salmon spawning stocks in the Yukon Drainage. Little is known about Rivers like the Atchuelinguk, Anvik, Innoko, and Koyukuk Rivers.
- Establish a second chinook and summer chum salmon escapement project in the lower Yukon area (Yukon River mouth to just upstream of Holy Cross).
- Improve the limited information available on Yukon River juvenile salmon biology (e.g. habitat use, food, migratory timing, causes and rates of mortality, etc.).
- Establish a second chinook escapement project in the Upper Yukon River area (from the confluence of the Tanana River to the U.S./Canada border).
- Determine the extent of delayed mortality associated with a fishery that catches and releases fish (specifically identified issues include the Innoko River pike sport fishing and chum salmon caught in test fish wheels and held in live boxes.).

## 2. Fisheries Monitoring

- Estimate Yukon River salmon stock contribution to any and all fisheries beyond the Yukon River drainage (specifically identified issues include Bering Sea trawl and Area M sockeye fisheries).
- Research the impact of potential regulatory changes and document actual impacts after a regulatory change has been made (specifically identified issues include the effect of mesh size on the size and sex of fish caught, and expanding the legal subsistence drift gill-net area in the middle and upper Yukon areas).
- Continue to refine and improve the population assessment projects in the lower portion of the river (specifically identified issues include Emmonak test fisheries and Pilot Station sonar).
- Assess the impacts of human activities on fishery resources (specifically identified issues include the effect of jet boat wakes on fall chum salmon and spawning beds, airboats over spawning beds, sedimentation due to timber or mining activities, sewage effluents, garbage dump leaching, etc.).
- Evaluate the biological and socioeconomic effects of hatchery and farmed fish on wild Yukon River salmon populations.

## 3. Coastal Ecology

- Document the migratory routes and rearing areas of Yukon River salmon while in the estuarine and open ocean, with primary emphasis on the Bering Sea.

## 4. Water Quality and Fish Contamination (Please note: The Fisheries Resource Monitoring Program does not fund contaminant assessment, evaluation, and monitoring.)

- Evaluate the levels of contaminants in fish species used for subsistence and assess how bioaccumulation of these toxins might affect the health of the fish as well as subsistence users who consume them.
- Assess the levels and effects of pollution on water and fish quality (i.e. outboards, mining, timber harvest, sewage, etc.).

## **Subsistence Harvest Monitoring**

### **1. Subsistence Harvest Patterns**

- Document the changes and continue to refine and improve subsistence harvest information in terms of patterns of use, species utilized, areas fished, gear used, and times fished.
- Develop and expand the subsistence harvest information for salmon and freshwater fish. Document the subsistence harvest of non-salmon species over the past decade and assess the effect of recent poor salmon returns on the subsistence harvest of other species.
- Assess whether or not what is harvested for subsistence salmon equates to what is needed for subsistence. More emphasis is needed on determining the actual subsistence need for fish species, in addition to what is actually harvested.

### **2. Harvest Monitoring Design**

- Continue to improve post-season house-to-house stratified surveys.

## **Traditional Ecological Knowledge (TEK)**

### **1. Long Term Trends and Sources of Variation**

- Identify potential causes or explanations for low and high fish abundance and population trends.
- Develop recommendations of how local information could be used in fisheries management decision-making.

### **2. Fish Life History**

- Document life history and biological information including habitat preferences, spawning and rearing areas, and seasonal movements of fish.
- Describe environmental changes, and how these may have affected fish life histories over time.

### **3. Subsistence Use and Practices**

- Document traditional and contemporary patterns of subsistence harvest including methods and timing of harvest, gear used, mapping of harvest areas and of fish related place names.
- Document the species used for subsistence, and the local names for fish species.
- Document different uses: how various fish and fish by-products are used for human food, dog food, trapping bait, etc.
- Document traditional and contemporary preparation and preservation methods.
- Describe traditional conservation measures and solutions.

## **KUSKOKWIM RIVER REGION**

### **Subsistence Fisheries Monitoring Issues**

The Yukon Kuskokwim Delta and Western Interior Regional Advisory Councils for this fisheries study region have set direction for identifying important issues and information needs since 2000. The original issues and data needs identification included input primarily from state and federal fisheries managers. These issues and needs have been presented and discussed with Regional Advisory Councils during their annual meeting cycles. Regional Advisory Councils have directed the Office of Subsistence Management staff to work closely with tribal and regional organizations that had been actively involved with cooperative fisheries programs in the region for over a decade. This process was initiated by the Office of Subsistence Management in 2000 when funds were provided to contract a fisheries and a social scientist to work with tribal, state and federal fisheries staff in the region to refine and prioritize data needs and projects that would address them. This local, multi agency/organization fisheries group, is called the Kuskokwim Fisheries Resource Coalition.

Kuskokwim Fisheries Resource Coalition is currently represented by the Association of Village Council Presidents, Orutsaramiut Native Council, Kuskokwim Native Association, McGrath Native Village Council, Alaska Department of Fish and Game, and the United States Fish and Wildlife Service. The Tanana Chief's Conference has been invited to join the Kuskokwim Fisheries Resource Coalition for the 2004 proposal development and review process. Kuskokwim Fisheries Resource Coalition has been instrumental in providing coordination and recommendations for the Kuskokwim Fisheries Resource Monitoring Program. This group identified critical information needs, developed preliminary study ideas, and refined study proposals into a consolidated package for the 2001, 2002 and 2003 Monitoring Plans. The Office of Subsistence Management, Technical Review Committee, Regional Advisory Councils, and Federal Subsistence Board have generally supported Kuskokwim Fisheries Resource Coalition's recommendations.

In 2002, the Office of Subsistence Management began a strategic evaluation of the Fisheries Resource Monitoring Program to ensure that funds are being effectively used to address issues and needs. Answers to a series of questions were used to 1.) evaluate existing issues and information needs; 2.) develop a framework for balancing the need to continue projects that collect long-term data sets with the need to fund projects that address new issues and needs; and 3.) create a strategy for prioritizing project selection and making the most efficient use of available funds. Initial assessments, presented at spring and fall 2002 Regional Advisory Council meetings, provided the following findings:

- How well have funded studies addressed issues and information needs for this region?  
The Fisheries Resource Monitoring Program has generally been successful in directing funding towards issues and information needs identified by Regional Advisory Councils for this region. Regional Advisory Councils have identified many issues and information needs with regard to subsistence fishery management. Much of the interest is centered on the salmon resources, including inseason run assessment in mainstem rivers, distribution and abundance of spawning escapements, and causes for recent stock declines. There is also substantial interest in the distribution, abundance, and life history of resident fish

species. In addition, Regional Advisory Councils desire improved documentation of changes in subsistence harvest patterns, and increased use of traditional knowledge in management.

- Have the most important issues and information needs been identified for this region? There is agreement among tribal, state and federal fisheries experts that large gaps exist for very basic abundance and distribution data for salmon and other fishery resources of the Kuskokwim region. Funding for long term monitoring of these valuable resources has been difficult to obtain. Information collected through priority projects supported by the Kuskokwim Fisheries Resource Monitoring Program has played a key role in the inseason management of Kuskokwim River and Bay fisheries since 2000 and is contributing to establishment of a long-term salmon resource monitoring program.
- Which issues and information needs require continued collection of long-term data sets? Attention continues to be focused on depressed chinook and chum salmon returns to the Kuskokwim River. In response to salmon stock declines in recent years, the Alaska Board of fisheries explicitly recognized chinook and chum salmon in the Kuskokwim River drainage as stocks of concern. The Board of Fisheries also implemented inseason subsistence restrictions as part of the Kuskokwim River Salmon Rebuilding Management Plan and developed specific management plans to begin rebuilding these stocks to ensure sustainable fisheries over the long term. The Federal Subsistence Board adopted this subsistence fishing schedule and the management plans.
- Are there any matching or alternative funding sources that should be considered in recommendations for project selection? Sources of alternative or matching funds for Kuskokwim fisheries monitoring come from the State of Alaska general funds appropriated by the Alaska Legislature, Kuskokwim Fisheries Disaster Relief funding which ends in 2002, and the Bering Sea Fishermen's Association. Additional funding programs administered by the North Pacific Research Board, the North Pacific Anadromous Fish Commission, and the Artic Yukon Kuskokwim Bering Sea Sustainable Fisheries Initiative may provide funding for studies useful for federal subsistence fisheries management within this fisheries study region. However, it may still prove difficult to sustain funding for the highest priority federal subsistence fishery management information needs and local capacity building efforts without supplemental funding for the Fisheries Resource Monitoring Program.
- Are there additional regulatory or management concerns that should be considered in recommendations for project selection? A number of information and data needs addressing important subsistence fisheries management issues listed below are not being addressed at this time because available funds are being committed to higher priority needs related to chum and chinook salmon management and rebuilding. The Kuskokwim Fisheries Resource Coalition has focused monitoring and research efforts on developing a comprehensive assessment of abundance and distribution of chinook and chum salmon. These fish are the highest subsistence use fish species in the region. Only a small percentage of available funds have been directed at non-salmon species issues. For example, subsistence gear restrictions have been implemented for broad and humpback

whitefish in Whitefish Lake near Aniak due to concerns about over harvest. Likewise, concerns about over harvest of arctic grayling and rainbow trout in the Aniak River have led to sport fishing restrictions for this species, although no restrictions on subsistence fishing have been implemented at this time. The Fisheries Resource Monitoring Program has funded studies on seasonal abundance, distribution and life history of the whitefish populations in Whitefish Lake (study 01-052) and conducted harvest surveys of rod and reel fishing in the Aniak River (study 01-147) during 2001.

Given limited funding available for Kuskokwim fisheries monitoring, the Regional Advisory Councils and Kuskokwim Fisheries Resource Coalition have placed a high priority on strategic planning to encourage financial partnering and coordination with other fisheries monitoring and studies programs. Continued communication and coordination among the many interests in the region is needed to achieve better resource stewardship and effective use of program funds. By August 2002, all participating agency and organization members of the Kuskokwim Fisheries Resource Coalition had signed a statement of support for securing funding to initiate a strategic fisheries planning process for the Kuskokwim region. This initiative was later supported via separate resolutions adopted by each Council during their fall 2002 meetings.

**Kuskokwim Strategic Planning and the 2004 Call for Proposals.** A strategic planning process is being proposed for the Kuskokwim Region, which would be initiated during the fall of 2002. Requests for funding to support this process have been submitted to Office of Subsistence Management, the Artic Yukon Kuskokwim Sustainable Salmon Initiative Fund and to participating Kuskokwim Fisheries Resource Coalition members. Completion of the plan will take about two years and will be linked closely to the Artic Yukon Kuskokwim Bering Sea Salmon Initiative planning process, gap analysis, and development of a science plan which integrates study and monitoring of Bering Sea salmon through their freshwater and marine life stages. This process will include local, tribal, state and federal fisheries organizations and agencies in its development and implementation. The planning process would encourage and include participation of user groups, Kuskokwim communities and public.

The Office of Subsistence Management recognizes the importance of effective strategic planning to the long-term success of the Fisheries Resource Monitoring Program. For this reason, the 2004 and possibly the 2005 call for proposals will focus primarily on continuation of existing high priority monitoring projects. This approach will provide an additional year of funding for key continuation projects until the strategic planning process can establish long-term priorities and funding arrangements.

## **Kuskokwim Region Subsistence Fisheries Monitoring Issues**

### **Stock Status and Trends**

1. Distribution, Abundance, and Life History of Fish Species
  - Describe distribution, abundance, and life history of freshwater resident species.
  - Assess the effects of beavers and their dams on whitefish and other fishes.
  - Conduct stream surveys to determine the distribution and abundance of salmon and other fish.
  - Identify spawning populations of salmon, and their run sizes in the Kuskokwim River watershed.
2. Fisheries Monitoring
  - Estimate Kuskokwim River drainage salmon interception/by-catch by fisheries adjacent to the Alaska Peninsula.
  - Estimate the level of by-catch in fish wheels of freshwater resident species.
  - Assess impact of changes in regulations in mesh size on size and sex of fish caught.
  - Identify contributions of different salmon populations to fisheries in the Kuskokwim River.
  - Determine the causes of the poor chinook, coho and chum salmon runs in the Kuskokwim River in recent years.
3. Coastal Ecology – Develop a design for a research program for those subsistence salmon fisheries that are dependent on the Bering Sea ecology.
4. Contaminants - Evaluate the levels of contaminants in fish species heavily used for subsistence and assess how bioaccumulation of these toxins might affect the health of the fish as well as subsistence users who consume them.

### **Subsistence Harvest Monitoring**

1. Subsistence Harvest Patterns
  - Document the changes in subsistence harvest patterns in terms of areas fished, gear used, and times fished.
  - Conduct harvest surveys of Nunapitchuk subsistence fisheries.
  - Determine subsistence harvest salmon and freshwater fish.
  - Assess effect of recent poor salmon returns on subsistence harvest of other species
2. Harvest Monitoring Design – Conduct house-to-house surveys to supplement fish harvest calendars.

**Traditional Ecological Knowledge (TEK)**

1. Long Term Trends and Sources of Variation
  - Document TEK of subsistence fish population trends and causes of variations in abundance.
  - Determine from TEK over long time scales the variations that have occurred in stock abundance for all species.
  - Identify from TEK potential causes or explanations for low and high fish abundance.
  - Consideration of how TEK information will be used in fisheries management decision-making.
2. Fish Life History – Document elders’ knowledge of the patterns of fish movement.
3. Subsistence Use and Practices
  - Document elders’ knowledge of traditional fishing areas for key species.
  - Document TEK of fisheries on Kanektok and Arolik Rivers by NVK – year 2000 if possible.
  - Document TEK of traditional conservation measures and solutions.
  - Subsistence users want more direct feedback concerning fisheries studies being conducted.



## **BRISTOL BAY -ALASKA PENINSULA/KODIAK-ALEUTIANS REGION SUBSISTENCE FISHERIES MONITORING ISSUES**

The two Advisory Councils for this fisheries study region have played the lead role in identifying important issues and information needs since 2000. A strategic planning process was begun in 2002 to ensure that Fisheries Resource Monitoring Program funds are being effectively used to address these issues and needs. Answers to a series of questions were used to provide: an information gap analysis of existing issues and information needs; a framework for balancing the need to continue projects that collect long-term data sets with the need to fund projects that address new issues and needs; and a strategy for prioritizing project selection and making the most efficient use of available funds. Initial assessments, presented at spring and fall 2002 Regional Advisory Council meetings, provided the following findings:

- How well have funded studies addressed issues and information needs for this region?  
The Fisheries Resource Monitoring Program has generally been successful in directing funding towards issues and information needs identified by Councils for this region. Most of the Councils' issues and information that have not been addressed concern fish stocks, fisheries, or areas outside the jurisdiction of the federal subsistence fishery management program; or issues more appropriately handled through other programs or agencies.
- Have the most important issues and information needs been identified for this region?  
While both Councils have generally been successful in identifying important issues and information needs for this region, some additions were suggested. These included salmon stock status and trends studies for Kametalook and Clark rivers within the Bristol Bay-Alaska Peninsula area; salmon stock status and trends studies for Buskin River and McLees Lake within the Kodiak-Aleutians area; Dolly Varden stocks status and trends studies for Bristol Bay; and database development and improved information access for collected and available information needed to manage federal subsistence fisheries. Also, the importance of and need for stock status and trends studies for northern pike, Arctic grayling, and whitefish, all of which are on the existing list for Bristol Bay, remained uncertain.
- Which issues and information needs require continued collection of long-term data sets?  
Within this region, annual, long-term collection of information should be considered for salmon stocks spawning in Togiak River, Lake Clark, Ugashik Lakes, Kametalook River, Clark River, and Alagnak River within the Bristol Bay-Alaska Peninsula area; and salmon stocks spawning in Buskin River, McLees Lake, and Mortenson Creek within the Kodiak-Aleutians area. It is not clear whether annual or periodic monitoring is needed for other salmon stocks, or for any Dolly Varden, northern pike, whitefish, or Arctic grayling stocks. Annual monitoring of federal subsistence salmon fisheries within this fisheries study region is provided through the existing Alaska Department of Fish and Game permit system, but similar information is not available for other fishes.
- Are there any matching or alternative funding sources that should be considered in recommendations for project selection? Programs administered by the North Pacific

Research Board, the North Pacific Anadromous Fish Commission, and the Exxon Valdez Trustee Council may provide funding for studies useful for federal subsistence fisheries management within this fisheries study region. However, it may still prove difficult to sustain funding for the highest priority federal subsistence fishery management information needs without supplemental funding for the Fisheries Resource Monitoring Program.

- Are there additional regulatory or management concerns that should be considered in recommendations for project selection? Consideration should be given to funding studies on Bristol Bay rainbow trout and Kodiak king crab. The Federal Subsistence Board will be considering 2003 regulatory changes that would (1) define subsistence fishing methods, means, seasons, and harvest limits for Bristol Bay rainbow trout and (2) decrease subsistence fishing harvest limits, increase legal size limits, and allow only taking of males for Kodiak king crab.

The two Regional Advisory Councils were generally pleased with results of the Fisheries Resource Monitoring Program to date. The Bristol Bay-Alaska Peninsula Council did not update their issues and information needs list for 2004 since several key Council members were absent from the fall 2002 meeting. The Kodiak-Aleutians Council extensively revised their list, and declared Afognak Lake sockeye salmon assessment to be their highest priority funding need:

## **Bristol Bay-Alaska Peninsula**

The list includes results of six village meetings conducted by the Bristol Bay Native Association and presented to the Council during the March 24-25, 2000 meeting as a document entitled “Bristol Bay Priority Information Needs Assessment”.

### **Stock Status and Trends**

1. Distribution, Abundance, and Life History of Fish Species
  - Lack of pike in the Alagnak River.
  - Assess grayling population within Becharof Lake.
  - Determine impacts of beluga whale consumption on salmon stocks, including development of more accurate beluga counting methods.
  - Determine effects of beaver dams and natural blockages on fish populations and spawning grounds within the Nushagak River.
  - There has been a decline in Kvichak River whitefish abundance, but there is no baseline data to quantify this change.
  - Document run timing and spawning areas for Lake Clark sockeye salmon stocks. (Local residents think the early run of sockeye salmon to the Kvichak River system spawns in Lake Clark.)
2. Fisheries Monitoring
  - Extend operation of ADF&G towers and weirs to count coho salmon on Lower Peninsula systems.

- Monitor chinook and coho salmon spawning escapements into the Egegik, Alagnak, and Nushagak Rivers.
  - Develop and operate a weir to count salmon on the Togiak River
  - Relocate the Alaska Department of Fish and Game sonar site used to count salmon entering the Nushagak River to spawn.
3. Effects of Sport Fishing on Subsistence Fishery Resources
- Determine effects of catch-and-release sport fishing on fish populations in the Nushagak, Naknek, and Egegik Rivers
  - Determine effects of jet motor boats and other sport fishing activities on salmon spawning and rearing areas in the Egegik, Alagnak, and Nushagak Rivers
  - Determine whether wanton waste by sports fishers is affecting subsistence fishery resources in the Nushagak and Naknek Rivers.

### **Subsistence Harvest Monitoring**

1. Subsistence Harvest Patterns
- Develop river monitoring program on the Togiak River
  - Obtain freshwater fish harvest data for the Alagnak River
2. Effects of Sport and Commercial Fishing on Subsistence Fishing Activities
- Impacts of sport harvest on subsistence harvest on the Naknek River
  - Establish a sport fishing creel survey on the Alagnak River
  - Obtain sport harvest estimates and angler effort indices for the Nushagak, King Salmon and Egegik Rivers
  - Conduct in-season subsistence and sports harvest monitoring on the Naknek River
  - Subsistence/sport/commercial fishing conflicts on the Nushagak and Naknek Rivers
  - Develop methods for establishing catch limits and harvest priorities on the Naknek River
  - Comments on subsistence fishing problems caused by sport and commercial fishing:
    - In-river management conflicts on the Nushagak River, including interruption of subsistence fishing activities, and closing coho salmon subsistence fishing
    - Trespass on native allotments by sport fishers on the Alagnak River.
    - Ensure continued access to harvest redfish (spawning and spawned-out salmon) in Naknek Lake

### **Traditional Ecological Knowledge**

1. Long Term Trends and Sources of Variation – Document Traditional Ecological Knowledge of Alagnak River shore erosion and bank movement.
2. Subsistence Use and Practices
- Document Traditional Ecological Knowledge of subsistence fisheries on Lower Alaska Peninsula, Egegik River, and Naknek River.

- Assess guided and unguided sport angler conflicts with Togiak River subsistence users.
- Update subsistence baseline information for Alagnak River.

## **Kodiak-Aleutians**

### **Stock Status and Trends**

The Kodiak-Aleutians Regional Advisory Council determined Afognak Lake sockeye salmon assessment and monitoring to be their highest priority issue and information need.

1. Salmon Spawning Stock Assessment and Monitoring
  - Afognak Lake, Afognak Island, Sockeye Salmon
  - Buskin River, Kodiak Island (Kodiak), Sockeye Salmon
  - Akalura Lake, Kodiak Island (Olga Bay), Sockeye and Coho Salmon
  - Horse Marine Lagoon and Lake, Kodiak (Olga Bay), Coho and Sockeye Salmon
  - Moser Bay-Ship Cove, Kodiak Island (Olga), Pink and Sockeye Salmon
  - Silver Salmon Creek, Kodiak Island (Olga Bay), Coho Salmon
  - Mortensens Creek, Cold Bay, Sockeye and Coho Salmon
  - Thin Point Lake, Cold Bay, Sockeye Salmon
  - Hoodoo Lake (Sapsuk Lake), Nelson Lagoon, Sockeye Salmon
  - Zelda Creek, King Cove (Leonard Harbor) Salmon
  - McLees Lake, Unalaska Island (Reese Bay), Sockeye Salmon
  - Unalaska Lake, Unalaska Island, Sockeye Salmon
  - Nikolski Bay, Umnak Island, Sockeye and Coho Salmon
  - Atka Island Pink Salmon
  - Kagalaska Island Sockeye Salmon
  - Airport Creek, Adak Island, Coho Salmon
  - Quail Bay, Adak Island, Sockeye Salmon
  - Little Thumb, Adak Island, Chum Salmon and Steelhead
  - Navfac Creel, Adak Island, Pink Salmon
  - Hidden Bay, Adak Island, Sockeye Salmon
  - Pribilof and St. Paul Islands Sockeye Salmon
2. Concerns for Small Stocks in Mixed Stock Salmon Fisheries - Olga Bay mixed stock commercial harvests of Dog Salmon Creek (Fraser Lake) and Upper Station (Olga Creek and South Olga Lakes) sockeye salmon may be affecting smaller stocks used for subsistence
3. Fisheries Training Programs for Local Residents - Train Atka and Adak residents to conduct ground-based salmon spawning surveys of local systems.

## **Traditional Ecological Knowledge**

1. Subsistence Use and Practices
  - Document subsistence uses prior to development of commercial fisheries
  - Document subsistence fishery needs and shortages

## **COOK INLET/GULF OF ALASKA REGION SUBSISTENCE FISHERIES MONITORING ISSUES**

The primary input for identification of important issues and information needs came from the Regional Advisory Council. These issues were first presented in 2000, and then updated in subsequent years. In 2002, the Regional Advisory Council first addressed strategic planning as part of their review of regional issues and information needs and in preparation for consideration of 2004 funding proposals. A series of questions were posed, and the answers to these questions provided: a gap analysis of existing issues and information needs; a framework for strategic balancing funding of both long-term data sets and new project starts; and potential strategies for prioritizing project selection and leveraging Fisheries Resource Monitoring Program funds. This assessment was recently presented at the Fall 2002 Regional Advisory Council meeting in the document: *Strategic Planning for the Fisheries Resource Monitoring Program*. A summary of this assessment for Cook Inlet/Gulf of Alaska is:

- How well have funded studies addressed issues and information needs for this region?  
Project selections to date address most of the Issues and Information Needs identified by the Council. The only specific issue not explicitly addressed in the Fisheries Resource Monitoring Program is stock assessment of burbot. Several Issues and Information Needs are outside of the scope of the Fisheries Resource Monitoring Program and include studies of coastal ecology and assessment of hatchery stocks. A few projects address similar issues in Prince William Sound, and the Council should explicitly address Issues and Information Needs for Prince William Sound.
- Which issues and information needs require annual collection of long-term data sets?  
Regarding current Issues and Information Needs as identified by the Council, project selection in the Fisheries Resource Monitoring Program should ensure data collections in the Copper River and include: (1) annual collection and reporting of basic subsistence harvest estimates for salmon; (2) periodic collection and reporting of baseline subsistence harvest information including TEK; (3) annual collection and reporting of chinook salmon stock assessment, particularly estimates of inriver abundance; and (4) annual collection and reporting of sockeye salmon stock assessment for stocks that support important subsistence fisheries.
- Are there matching or alternative funding sources that should be considered in recommendations for project selection?  
Even with the potential for alternative funding sources, it will be difficult to adequately sustain funding at existing budget levels for the most compelling Issues and Information Needs in the Copper River of annual subsistence harvest monitoring, periodic baseline surveys of subsistence harvest information including collection of TEK, chinook salmon stock assessment, and sockeye salmon stock assessment. Other issues that could rise in importance for subsistence management, and subsequent funding through the Fisheries Resource Monitoring Program, include assessment of fisheries and stocks in the Copper River for species other than salmon; Prince William Sound; and Cook Inlet. Addition of these or other Issues and Information Needs would likely form the basis of supplemental funding requests for the Fisheries Resource Monitoring Program.

- Are there additional regulatory or management concerns that should be considered in recommendations for project selection? No, not at this time.

The Regional Advisory Council updated their Issues and Information Needs to provide guidance regarding project priorities as follows:

## **Cook Inlet**

The Southcentral Regional Council identified specific issues regarding the Kenai River. However, additional subsistence harvest use information is needed to determine customary and traditional use determinations and specific subsistence fisheries regulations; particularly for the Kenai Peninsula. This work has already been initiated and is approximately two years in duration. Further consideration of any other Fisheries Resource Monitoring Program projects for the Kenai Peninsula depend upon analysis of these subsistence use data.

## **Copper River**

### **Stock Status and Trends**

1. Distribution, Abundance, and Life History of Fish Species
  - Conduct stock identification studies and population estimates for salmon spawning in tributaries.
  - Study the impact of beaver dams on salmon spawning habitat in Tanada, Born and Sinona Creeks
  - Document run timing and life histories.
  - Assess the general decline in the Copper Lake and Chitina Valley burbot populations and factors that might be causing the decline.
2. Fisheries Monitoring
  - Evaluate the feasibility of employing sonar for fish counting closer to the mouth of the Copper River rather than at Miles Lake. This could provide managers with more timely information for in-season management.
  - Initiate assessment for fish stocks where fishing access has been improved.
  - Provide assessment of harvest patterns for all users.

### **Subsistence Harvest Monitoring**

1. Subsistence Harvest Patterns
  - Identify preferred subsistence use areas.
  - Document subsistence needs and harvest levels.

### **Traditional Ecological Knowledge (TEK)**

1. Long Term Trends and Sources of Variation

- Document TEK on streams pioneered by new salmon populations and on streams that had runs in the past but are no longer productive.
- Conduct a TEK study on interannual and intraannual variations in salmon runs.

## **Prince William Sound**

The Regional Advisory Council recognized the need to conduct some studies in Prince William Sound for fish stocks, fisheries, and issues important to subsistence users. Although specific areas of study were not identified, the need to address subsistence issues in the Copper River will often take precedence over those in Prince William Sound. Therefore, proposed studies in Prince William Sound should be conscious of cost and duration.



## SOUTHEAST ALASKA REGION SUBSISTENCE FISHERIES MONITORING ISSUES

The primary input for identification of important issues and information needs came from the Regional Advisory Council. These issues were first presented in 2000, and then updated in subsequent years. In 2002, the Regional Advisory Council first addressed strategic planning as part of their review of regional issues and information needs and in preparation for consideration of 2004 funding proposals. A series of questions were posed, and the answers to these questions provided: a gap analysis of existing issues and information needs; a framework for strategic balancing funding of both long-term data sets and new project starts; and potential strategies for prioritizing project selection and leveraging Fisheries Resource Monitoring Program funds. This assessment was recently presented at the Fall 2002 Regional Advisory Council meeting in the document: *Strategic Planning for the Fisheries Resource Monitoring Program*. A summary of this assessment for Southeast is:

- How well have funded studies addressed issues and information needs for this region?  
Project selections to date address the vast majority of Issues and Information Needs identified by the Council. The only specific issues and locations not explicitly addressed in Fisheries Resource Monitoring Program or closely related projects are TEK of salmon in the Situk and Ahrnklin rivers, history of subsistence regulations in southeast, and Unuk River eulachon.
- Which issues and information needs require annual collection of long-term data sets?  
Regarding current Issues and Information Needs as identified by the Council, project selection in the Fisheries Resource Monitoring Program should ensure: (1) annual collection and reporting of basic subsistence harvest estimates for salmon and other important subsistence fisheries; (2) periodic collection and reporting of baseline subsistence harvest information including TEK; and (3) annual collection and reporting of sockeye salmon stock assessment, particularly estimates of escapement, for stocks that support important subsistence fisheries. Regulatory and management concerns may also require time-series data collections.
- Are there matching or alternative funding sources that should be considered in recommendations for project selection? Even with the potential for alternative funding sources, it will be difficult to adequately sustain funding at existing budget levels for the most compelling Issues and Information Needs, which include annual subsistence harvest monitoring, periodic baseline surveys of subsistence harvest information including collection of TEK, and sockeye salmon stock assessment. Other issues that could rise in importance for subsistence management, and subsequent funding through the Fisheries Resource Monitoring Program, include assessment of eulachon, trout, and coho salmon. Addition of these or other Issues and Information Needs will likely form the basis of a supplemental funding request for the Fisheries Resource Monitoring Program.
- Are there additional regulatory or management concerns that should be considered in recommendations for project selection? The Council should re-assess the importance of Prince of Wales Island steelhead under their Issues and Information Needs. Proposals to

the Fisheries Resource Monitoring Program in 2004 that address assessment of steelhead on Prince of Wales Island systems utilized by subsistence users should be strongly considered for funding. In addition, the Council stressed the importance of studies involving the use or collection of Traditional Ecological Knowledge.

The Regional Advisory Council updated their Issues and Information Needs and recommended projects that address (in order of importance):

- Traditional Ecological Knowledge
- Harvest Monitoring
- Salmon assessment, particularly sockeye and coho salmon
- Assessment of fish species (other than salmon) important to subsistence use; particularly Prince of Wales Island steelhead and Behm Canal eulachon.